FROST Fighter PORTABLE HEATERS

INDIRECT FIRED SPACE HEATERS

PROPANE AND NATURAL GAS

MODELS

IDF350 LP/NG

IDF500 LP/NG

Installation – Operation/Maintenance

Instructions and Parts List

READ INSTRUCTIONS PRIOR TO STARTING HEATERS

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REV. 1.3.0
MAY 2025

IMPORTANT INSTRUCTIONS

1. READ ALL INSTRUCTIONS BEFORE INSTALLING OR USING THIS HEATER.

2. This heater is hot when in use. To avoid burns do not touch hot surfaces. Keep combustible materials such as furniture, papers, clothes, curtains, tarps, plastic sheets, combustible building materials & partitions, other equipment, etc. at least 10 feet (3 m) from the front of the heater and keep them away from the sides and rear.

3. Do not operate any heater after it malfunctions. Disconnect power at the service panel and have it inspected by a qualified electrician before reusing,

4. To disconnect heater, turn controls to off and disconnect power supply cord from power source.

5. Do not insert or allow foreign objects to enter any ventilation or exhaust opening as this may cause overheating or fire or damage to the heater.

6. To prevent a possible fire, do not block air intake or exhaust in any manner.

7. Do not use it in areas where gasoline, paint, or flammable vapors or liquids are used or stored.

8. Use this heater only as described in this manual. Any other use not recommended by the manufacturer may cause fire, electric shock or injury to person(s).

9. This heater may include a visible or audible alarm to warn that parts of the heater are getting excessively hot. If the alarm illuminates (or sounds), immediately turn the heater off and inspect for any objects on or adjacent to the heater that may have blocked the airflow or otherwise caused high temperatures to have occurred. Do not operate with the alarm illuminating (or sounding).

SAVE THESE INSTRUCTIONS

SAFETY INFORMATION AND SAFETY INSTRUCTIONS

STANDARD WARNING SYMBOLS

INDICATES EXTREME HAZARD THAT COULD RESULT IN INJURY OR DEATH

INDICATES POSSIBLE HAZARD THAT COULD DAMAGE EQUIPMENT OR PROPERTY AND/OR RESULT IN INJURY

INDICATES POSSIBLE HAZARD THAT COULD CAUSE IMPROPER OPERATION OR DAMAGE EQUIPMENT

OTHER SPECIFIC HAZARD SYMBOLS

THESE SYMBOLS ARE USED THROUGHOUT THIS MANUAL TO INDICATE SPECIFIC HAZARDS

RISK OF FIRE OR EXPLOSION

RISK OF SHOCK OR ELECTROCUTION

HOT SURFACES – RISK OF BURNS

RISK OF ASPHYXIATION

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READ INSTRUCTIONS PRIOR TO OPERATING HEATER

GENERAL HAZARD WARNING

FAILURE TO COMPLY WITH PRECAUTIONS AND INSTRUCTIONS PROVIDED WITH THIS HEATER CAN RESULT IN DEATH, SERIOUS BODILY INJURY AND PROPERTY LOSS OR DAMAGE FROM HAZARDS OF FIRE, EXPLOSION, BURNS, AND/OR ELECTRICAL SHOCK.

ONLY PERSON(S) WHO CAN UNDERSTAND AND FOLLOW THE INSTRUCTIONS SHOULD USE OR SERVICE THIS HEATING UNIT.

IF YOU REQUIRE ASSISTANCE OR HEATER INFORMATION SUCH AS AN INSTRUCTION MANUAL, LABELS, ETC., CONTACT THE MANUFACTURER.

HAZARD VOLTAGES ARE PRESENT. DO NOT REMOVE ANY COVERS OR ATTEMPT SERVICING WHILE THIS EQUIPMENT IS CONNECTED TO A POWER SOURCE.

FIRE AND EXPLOSION HAZARD. KEEP SOLID COMBUSTIBLES, SUCH AS BUILDING MATERIAL, PAPER AND/OR CARDBOARD A SAFE DISTANCE AWAY FROM THE HEATER AS REQUIRED BY THE INSTRUCTIONS. NEVER USE THE HEATER IN SPACES WHICH MAY CONTAIN VOLATILE OR AIRBORNE COMBUSTIBLES, OR PRODUCTS SUCH AS GASOLINE, SOLVENTS, PAINT THINNER, ACETONE, DUST PARTICLES AND/OR UNKNOWN CHEMICALS. USE THE CORRECT FUEL(S) AND POWER SUPPLY CABLES RATED FOR THIS EQUIPMENT AND IT'S INTENDED USE ONLY.

DO NOT USE THIS HEATER IN A SPACE WHERE GASOLINE OR OTHER LIQUIDS HAVING FLAMMABLE VAPOURS ARE STORED OR USED.

THIS PRODUCT IS NOT INTENDED FOR HOME OR RECREATIONAL VEHICLE USE.

INSTALLERS RESPONSIBILITY

THE INTENDED USE OF THIS HEATER IS FOR THE TEMPORARY HEATING OF BUILDINGS OR STRUCTURES AND THOSE UNDER CONSTRUCTION, ALTERATION OR REPAIR. DO NOT INSTALL OR OPERATE THIS HEATER IN A SPACE WHERE GASOLINE OR OTHER LIQUIDS HAVING FLAMMABLE VAPOURS ARE STORED OR USED. ALL INSTALLATIONS MUST MEET CURRENT NATIONAL CODES AND THOSE OF THE LOCAL JURISDICTIONS.

DESIGNED FOR VAPOUR GASES ONLY – DO NOT SUPPLY LIQUID FUELS TO HEATER.

GAS FIRED INSTALLATIONS - STANDARD: ANSI Z83.7 – CSA 2.14

ALL GAS INSPECTION AUTHORITIES IN CANADA REQUIRE THAT THE INSTALLATION AND MAINTENANCE OF HEATER AND ACCESSORIES SHALL BE ACCOMPLISHED BY A QUALIFIED GAS FITTER.

USE ONLY THE CORRECT DUCTING TYPE AND TEMPERATURE RATING AND ONLY UP TO THE MAXIMUM LENGTHS AS SPECIFIED.

OPERATORS RESPONSIBILITY

Installation and adjustment of the burner requires technical knowledge and the use of combustion test instruments. **Do not** tamper with the unit or any safety controls. Call your qualified service technician. Incorrect operation of the burner could result in severe personal injury, death, or substantial property damage.

Have your equipment inspected and adjusted annually by your qualified service technician to assure continued proper operation.

Never store gasoline or other combustible materials near the heating equipment. This could result in a fire, or explosion with the risk of severe personal injury, death or property damage.

Do not permit person(s) unfamiliar with the equipment to operate the heater.

Use only the correct fuel intended for the heater and as stipulated in the manual. Using the wrong fuel(s) can result in fire, explosion, injury, and damage to equipment and property.

GENERAL NOTES:

NATURAL GAS CODE: B149.1
PROPANE GAS CODE: B149.2

ALL GAS INSPECTION AUTHORITIES IN CANADA REQUIRE THAT THE INSTALLATION AND MAINTENANCE OF HEATER AND ACCESSORIES SHALL BE ACCOMPLISHED BY A QUALIFIED GAS FITTER.

THE INTENDED USE OF THIS HEATER IS FOR THE TEMPORARY HEATING OF BUILDINGS OR STRUCTURES UNDER CONSTRUCTION, ALTERATION OR REPAIR.

⚠WARNING **FAILURE TO COMPLY WITH PRECAUTIONS AND INSTRUCTIONS PROVIDED WITH THIS HEATER CAN RESULT IN DEATH, SERIOUS BODILY INJURY AND PROPERTY LOSS OR DAMAGE FROM HAZARDS OF FIRE, EXPLOSION, BURN, ASPHYXIATION, CARBON MONOXIDE POISONING, AND/OR ELECTRICAL SHOCK.**

⚠WARNING **FIRE, BURN INHALATION, AND EXPLOSION HAZARD. KEEP SOLID COMBUSTIBLES, SUCH AS BUILDING MATERIAL, PAPER AND/OR CARDBOARD A SAFE DISTANCE AWAY FROM THE HEATER AS RECOMMENDED BY THE INSTRUCTIONS. NEVER USE THE HEATER IN SPACES WHICH MAY CONTAIN VOLATILE OR AIRBORNE COMBUSTIBLES, OR PRODUCTS SUCH AS GASOLINE, SOLVENTS, PAINT THINNER, ACETONE, DUST PARTICLES AND/OR UNKNOWN CHEMICALS.**

⚠WARNING **THIS PRODUCT IS NOT INTENDED FOR HOME OR RECREATIONAL VEHICLE USE.**

⚠WARNING **DO NOT USE THIS HEATER IN A SPACE WHERE GASOLINE OR OTHER LIQUIDS HAVING FLAMMABLE VAPOURS ARE STORED OR USED.**

MODELS AND SPECIFICATIONS

MODEL	IDF350 LP/NG	IDF500 LP/NG
HEAT CAPACITY	350,000 BTU/HR	420,000 BTU/HR
FUEL CAPACITY	NATURAL GAS/PROPANE	NATURAL GAS/PROPANE
FAN MOTOR	½ HP 1750 RPM	1HP 3450 RPM or 1 HP 1750 RPM
BURNER MOTOR	1/4 HP 3450 RPM	1/4 HP 3450 RPM
MANIFOLD PRESSURE	2.0” W.C.	3.0” W.C.
MAXIMUM INLET PRESSURE	14” W.C. / ½ LB	14” W.C. / ½ LB
MINIMUM INLET PRESSURE	6.0” W.C.	6.0” W.C.
MINIMUM TEMP. RATING	-40’C/F	-40’C/F
FUEL CONSUMPTION PROPANE/NAT GAS	$137FT^3$/3.8 US GPH $347FT^3$/9.7 US GPH	$176FT^3$/5.0 US GPH $446FT^3$/12.4 US GPH
APPROVAL AGENCY	C US	C US
OVERALL DIMENSIONS	70” X 35” X 52”	70” X 35” X 52”
CFM	2500	3100
WEIGHT	467 LBS	467 LBS

MAXIMUM ALLOWABLE DUCT LENGTHS (IDF 350 & IDF 500)	
DISCHARGE OUTLET	LENGTH
Two 12” Ducts	24 Feet
One 16” Duct	45 Feet

INSTALLATION INSTRUCTIONS

TO REDUCE THE RISK OF FIRE, DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS AND LIQUIDS IN THE VACINITY OF THE HEATER.

The National Fuel Code, ANSI 223.1/NFPA 54 and/or National Standards of Canada CAN/CGA B149.1 installation codes must be followed as well as the recommendations of local authorities having jurisdiction.

Inspect the heater before each use and have it annually inspected by a qualified agency.

Inspect the hose assembly for wear, cuts, etc. and replace if necessary.

When firing the unit in an enclosed area, three square feet (0.278 square meters), must be provided to allow free entry of the air required for operation.

Do not operate the unit in partly ventilated areas without a flue pipe connected to the unit.

Do not operate the unit near combustible surfaces and materials.

For electrical supply, use 3 wire receptacles with “U” ground. Do not use cords with LED indicators. Use minimum 12 AWG cords up to a maximum of 50’. For lengths between 50’-100’, use a 10 AWG cord. Cord lengths exceeding 100’ are not recommended.

If using a thermostat, cord should be 12 AWG and not exceed 50 feet.

The cylinder supply system must be arranged to provide for vapor withdrawal from the operating cylinder.

ADDITIONAL INSTRUCTIONS FOR PROPANE GAS

Reference the Storage and Handling of Liquefied Petroleum Gas, ANSI/NFPA 58 and/or the National Standards of Canada CAN/CGA B149.2 installation codes for propane gas.

The heater must be located more than six (6) feet (1.83 meters) away from the propane source or propane tank.

When the heater is not in use insure to shut off the gas supply from the propane source or propane tank.

Disconnect the heater from the propane source or propane tank when storing the heater indoors.

The heater must not discharge toward any propane gas container within 20 feet (6 M).

****Propane tank size should be a minimum of 2x 100 lbs. piped in tandem.****

GAS LEAK TESTING

After removal for service or replacing components on the gas manifold, a gas leakage test must be performed.

1. Close main gas firing valve on the gas manifold.
2. Connect your source gas to the gas manifold.
3. Once connections are tightened, open the source gas and fire unit.
4. On each connection and fitting, apply soap solution and check for bubbles. This will indicate a gas leak if bubbles continue to form.
5. Fix any leaks that are found by applying pipe dope to the leaking fitting or connection and re-tighten. Check for leaks once repairs, if any, are made.
6. Open main gas firing valve and start the unit.
7. Once the unit is operating and burner is running, redo the soap test to ensure gas fittings are tight.

INSTALLATION CLEARANCES

Ceiling – 24 inches (0.6 meters)
Sides – 6 inches (0.15 meters)
Burner End – 24 inches (0.6 meters)
Discharge End – 10 feet (3.0 meters)
Vent Connector – 24 inches (0.6 meters)
Floor – Combustible

IMPORTANT INSTALLATION INSTRUCTIONS

Frost Fighter heaters are suitable for outdoor use.

- For outdoor installations ensure minimum stated clearances are maintained and do not operate in partially ventilated areas. A suitable rain cap is required. The addition of a 36” pipe extension on the flue before the rain cap is highly advisable. Avoid placing heater closer than 3 feet (1 meter) from doorways or openings.

IF HEATER IS TO BE OPERATED INDOORS IT MUST BE VENTED TO THE OUTDOORS.

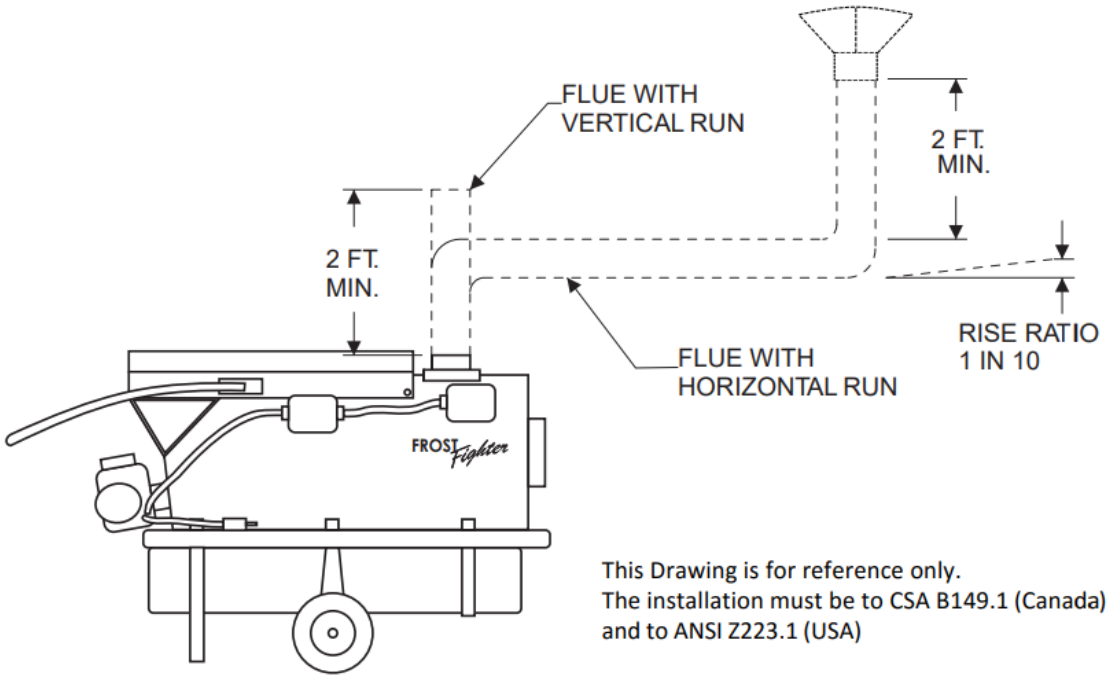
All venting must conform to CSA B149.1/ANSI Z223.1 and with local authorities having jurisdiction.

The flue must be securely attached to the unit with tight joints and must not be sized to have a cross-sectional area less than that of the flue collar at the unit. Minimize connecting pipe length and the number of bends by locating the unit as close to the flue pipe as possible. Do not use tees or elbows greater than 90 degrees, (UNLESS NOTED). Ensure specified minimum installation clearances are maintained.

The flue pipe shall terminate in a vertical section at least two feet long and have a suitable rain cap. Horizontal run should have a rise ratio of 1 in 10 away from the heater. See flue pipe connection layout drawing.

Other appliances must not be connected so as to vent through the venting of this unit.

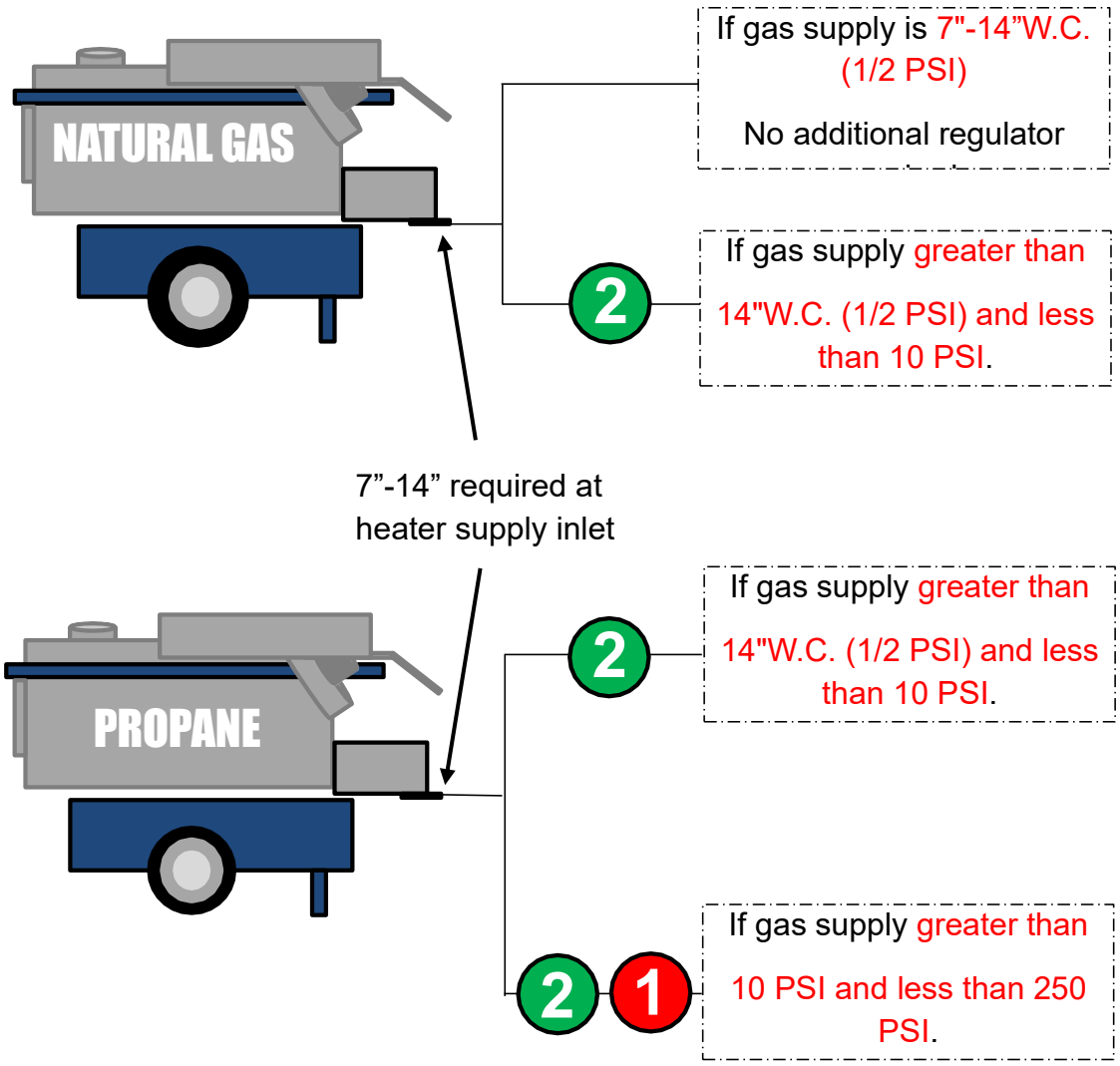
FLUE PIPE CONNECTION LAYOUT FOR INDOOR INSTALLATION



This Drawing is for reference only.
The installation must be to CSA B149.1 (Canada)
and to ANSI Z223.1 (USA)

SUPPLY PRESSURES AND REGULATORS

FOR ALL MODELS: 7" TO 14" W.C. IS REQUIRED AT THE GAS INLET OF THE HEATER



1st Stage Regulator – **50276A**

2nd Stage Regulator – **50274A**

SUPPLY LINE SIZING

Table A.2									
Maximum capacity of natural gas in thousands of Btuh for Schedule 40 pipe for supply pressures of 7-14 in w.c. based on a pressure drop of 1 in w.c.									
Length of pipe, ft	**Pipe size (NPS)**								
	1/2	**3/4**	**1**	**1-1/4**	**1-1/2**	**2**	**2-1/2**	**3**	**4**
10	227	474	894	1,835	2,749	5,295	8,439	14,919	30,429
20	156	326	614	1,261	1,890	3,639	5,800	10,253	20,914
30	125	262	493	1,013	1 517	2,922	4,658	8,234	16,795
40	107	224	422	867	1,299	2,501	3,986	7,047	14,374
50	95	199	374	768	1,151	2,217	3,533	6,246	12,739
60	86	180	339	696	1,043	2,008	3,201	5,659	11,543
70	79	166	312	640	959	1,848	2,945	5,206	10,619
80	74	1S4	290	596	893	1,719	2,740	4,843	9,879
90	69	145	272	559	837	1,613	2,571	4,544	9,269
100	65	137	257	528	791	1,524	2,428	4,293	8,756
125	58	121	228	468	701	1,350	2,152	3,805	7,760
150	52	110	207	424	635	1,223	1,950	3,447	7,031
175	48	101	190	390	584	1,126	1,794	3,171	6,469
200	45	94	177	363	544	1,047	1,669	2,950	6,018
250	40	83	157	322	482	928	1,479	2,615	5,333
300	36	75	142	291	437	841	1,340	2,369	4,832
350	33	69	131	268	402	774	1,233	2,180	4,446
400	31	64	121	249	374	720	1,147	2,028	4,136
450	29	61	114	234	351	675	1,076	1,903	3,881
500	27	57	108	221	331	638	1,017	1,797	3,666
600	25	52	98	200	300	578	921	1,628	3,321
700	23	48	90	184	276	512	847	1,498	3,056
800	21	44	83	171	257	495	788	1,394	2,843
900	20	42	78	161	241	464	740	1,308	2,667
1,000	19	39	74	152	228	438	699	1,235	2,519
1,200	17	36	67	138	206	397	633	1,119	2,283
1,400	16	33	62	127	190	365	582	1,030	2,100
1,600	15	30	57	118	177	340	542	958	1,954
1,800	14	29	54	111	166	319	508	899	1,833
2,000	13	27	51	104	156	301	480	849	1,712

Table from CSA B149.1-10 (2015)

OPERATING INSTRUCTIONS

TO START HEATER

1. Ensure unit is flat and level before starting, canopy and fan guards must be in place.
2. Check that the operating switch on the unit is in the “OFF” position before plugging supply cord to a 115 VAC outlet.
3. **Ensure that the maximum gas supply being fed to the RV54 Maxitrol regulator is 14” W.C. (1/2 PSI).**
4. Check that the supply gas and conversion valves are set to the same gas type. See “Gas conversion procedure” outlined in this manual for more details.
5. Once valve setting is verified, turn on main gas firing valves to open position.
6. Plug power supply cord to a 115 VAC outlet with sufficient capacity rating.
7. Flip operating switch to "MANUAL" position. This will start the unit.
8. For use with a thermostat, the operating switch should be placed in the “THERMOSTAT" position.
9. There will be a 45 second “pre-purge” delay after the burner motor begins to run to clear the combustion chamber of any residual gases.

IF HEATER FAILS TO START

1. Controller will go into a recycle mode which runs another 45 second “pre purge” followed by another trail for ignition. The controller will attempt to fire 3 times before going into lockout.
2. To reset the lockout mode, simply turn the power switch to the “OFF” position then back to the “THERMOSTAT” or “MANUAL” position.

****IF HEATER FAILS TO START, REFER TO TROUBLE SHOOTING GUIDE****

TO STOP HEATER

Flip switch to “OFF” position. The supply fan will continue to operate until the heat exchanger has sufficiently cooled.

DO NOT DISCONNECT MAIN POWER UNTIL SUPPLY FAN HAS STOPPED RUNNING.

COMBUSTION AIR ADJUSTMENTS

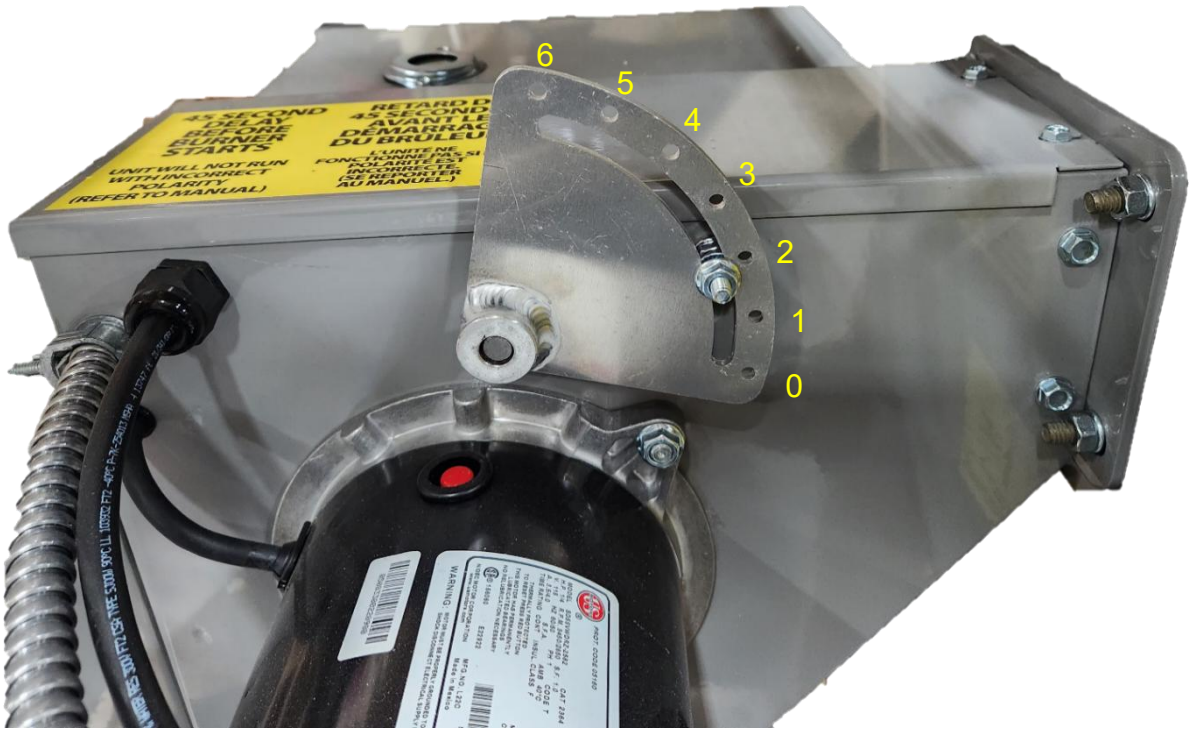
Damper adjustment will be required in colder weather and different elevations when there is reduced air density. The requirement will be that the damper be opened to allow more air into the burner. Adjustments may also be made to the damper of the burner when undesirable performance is observed (indicated by excessive pulsing or rumbling and/or smoke from the flue). Suggested air damper settings at sea level for the IDF 350 & IDF 500 is 2.

1. Locate the adjustable damper connection on the right-hand side when facing the burner.
2. Loosen the nut on the adjustable connection, and manually move the damper connection until the desired position is achieved (i.e., no pulsations and/or smoke from flue).
3. Re-tighten the nut on the adjustable damper connection.
4. Do not adjust damper below 3/4 as unit will run too rich (fuel/air mixture) and produce carbon buildup.

Note: These settings are based upon clean and properly adjusted equipment in proper working order, correct fuel pressures and at altitudes below 2000 feet ASL. Combustion air adjustments can vary with location, altitude and type of fuel used. Less air may be required in extreme cold conditions. More air / less fuel may be required for increased altitudes.

Burner input must be de-rated by 4% per every 1000 ft. (300 m.) ASL when above 2000 ft. (600

m.) Example operating at 5000 ft. (1500 m.) ASL, the burner input must be de-rated by .04 x 5 = .20 = 20%



GAS CONVERSION PROCEDURE

IDF350 & 500 units running on Natural gas or Propane, come standard with a gas conversion valve. This conversion valve has a cross drilled orifice which allows you to use either gas simply by adjusting the valve and is indicated by a red handle.

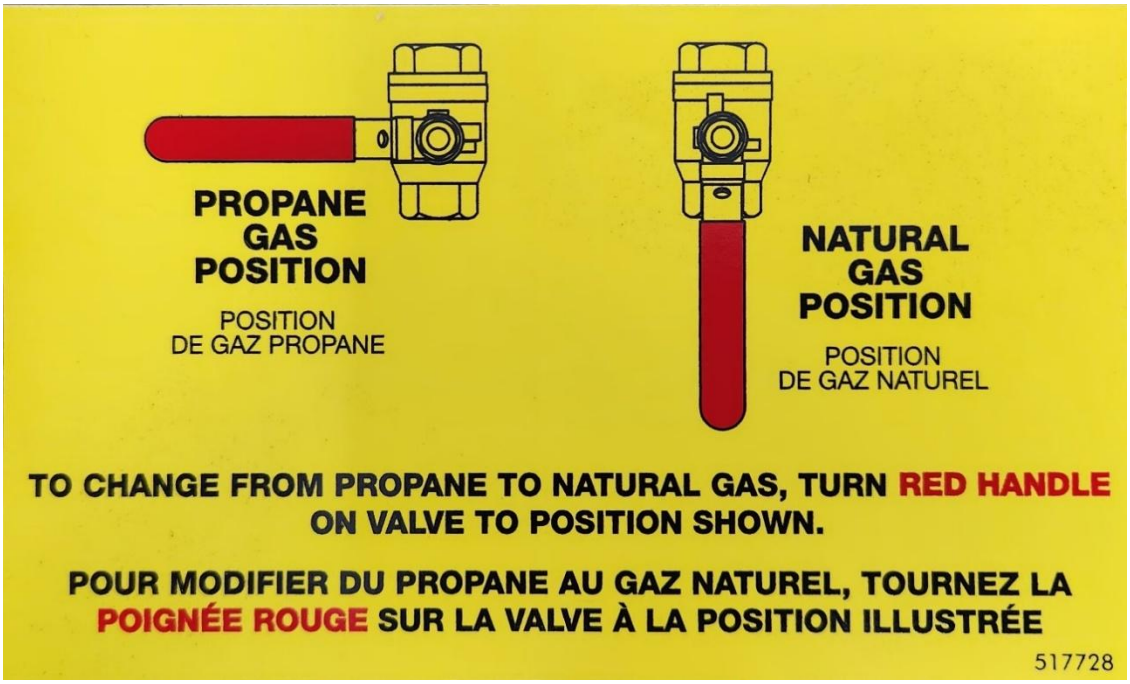
Propane Gas

For propane gas use, the conversion valve must be placed in the propane gas position as per the label on the unit. This is the “closed” position of the red handled ball valve on the manifold. The handle should be 90’ to the valve. Once in the closed position, the valve must be locked in that position so that the unit will operate safely.

Natural Gas

For natural gas use, the conversion valve must be placed in the natural gas position as per the label on the unit. This is the “open” position of the red handled ball valve on the manifold. The handle should be in line with the manifold. Once placed in the open position, the valve must be locked in that position so that the unit will operate safely.

⚠WARNING **DOUBLE CHECK THAT YOU ARE USING NATURAL GAS. USING PROPANE IN THIS POSITION COULD BE HAZARDOUS.**



MAINTENANCE INSTRUCTIONS

WARNING  **BEFORE MOVING ANY GUARDS OR SAFETIES DISCONNECT THE MAIN POWER AS THE SUPPLY FAN WILL CYCLE AUTOMATICALLY.**

WARNING **HEATERS SHOULD BE FULLY SERVICED ANNUALLY TO ENSURE PROPER PERFORMANCE. MAINTENANCE SHOULD BE PERFORMED BY TRAINED PERSONNEL ONLY. INCORRECT MAINTENANCE MAY RESULT IN IMPROPER OPERATION AND SERIOUS INJURY.**

AFTER REMOVAL FOR SERVICE OR REPLACING COMPONENTS ON THE GAS MANIFOLD, A GAS LEAKAGE TEST MUST BE PERFORMED.

AUTO RESET HIGH LIMIT SWITCH

It is recommended that the limit switch be checked every heating season to ensure the burner will shut down if the temperature exceeds 250°F. This can be done by restricting the air flow through the unit. After tests are complete, remove the restrictions.

MANUAL RESET HIGH LIMIT SWITCH

It is recommended that the limit switch be checked every heating season to ensure the burner will shut down if the temperature exceeds 300°F. This can be done by restricting the air flow through the unit. After tests are complete, remove the restrictions.

FAN SWITCH

The fan switch has been selected to allow for preheating of the heat exchanger to ensure that only heated air is allowed to enter the space. Upon satisfying the need for heat, the fan switch will continue to run the supply fan until the heat exchanger has cooled sufficiently. This feature will help prolong the life of your heat exchanger.

AIR SWITCH

The air switch should be tested regularly to ensure it will cut out if any blockage or disruption to burner airflow occurs. With the unit running, slide a 6” X 8” piece of cardboard upwards in front of screen on burner (under control panel) slowly. When the screen is 2/3 covered, solenoid valve(s) should close, shutting off gas supply.

FENWALL IGNITION MODULE

Upon start up, LED light should flash once. If not, refer to trouble shooting guide. Once signal is detected (after 4 seconds of trial for ignition, TFI) shut off gas then turn back on. Unit should retry to light after 60 seconds. With the unit running, turn off the gas supply. Burner should stop firing and LED should flash 3 times.

ELECTRODE ASSEMBLY

Should be removed when doing maintenance and flame and spark rod cleaned and checked for cracks or chips. Also inspect wires and connections. Do a continuity check between flame rod and end of wire to ensure good signal.

ELECTRICAL

Ensure all conduit (BX) connectors are tight. Check inside connections in the control box to ensure good connections. Check marrettes.

MAINTENANCE INSTRUCTIONS CONT'D

FAN

Check for dust or dirt build up on blades. Check for tightness of the set screw. Run the heater to check for excess vibration. If physical damage is seen or noticed, replace the fan.

MOTORS

No lubrication is necessary since the bearings are the sealed type. Clean motor of existing dust or dirt.

HEAT EXCHANGER

If a smoky condition continues even after adjusting the air setting, the heat exchanger may need to be cleaned.

HEAT EXCHANGER CLEANING

1. Remove the front cap (**P/N #48205/20205**).
2. Remove the small cover panel (**P/N #48119/20119**) located on the top o f the unit between the flue and front cap (**P/N #48205**).
3. Remove the fan thermostat cover on the outer jacket (**P/N #48112**). Loosen thermostat and remove from jacket. Remove high limit thermostat cover (**P/N #48112**).
4. Slide heat exchanger out of jacket and place front (discharge or closed) end face down on ground (**P/N 48115**).
5. Access for combustion chamber and heat exchanger cleaning is provided through the burner head opening and by removing the heat exchanger cap ring(s) (**P/N 48115**).
6. To reassemble, reverse procedure.

Contact your distributor or Frost Fighter for further information regarding this procedure.

LIMITS, THERMAL SWITCH AND FEELERS

All units are equipped with a factory mounted auto reset high limit switch. This switch will disable the burner in the event the heat exchanger gets too hot. The switch will automatically reset once the exchanger temperature has dropped below the tripping point.

Auto reset high limit 250°F – **P/N 48110C**

LP/NG units are also furnished with a manual reset high limit. The manual reset high limit switch will disable the burner in the event the heat exchanger gets too hot. The switch will need to be manually reset once the exchanger temperature has dropped below the tripping point by lightly pressing on the red button in the center of the switch.

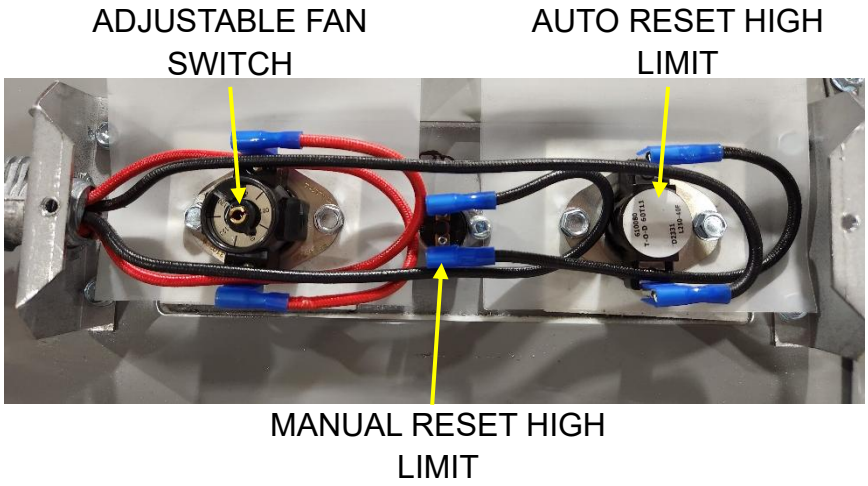
Manual reset high limit 300°F – **P/N 48109**

IDH models are also provided with an adjustable fan switch to ensure only heated air is supplied to the space. This switch is installed with a temperature “feeler”. **Always make sure that the temperature feeler is touching the heat exchanger!!**

Adjustable fan switch 90°F-130°F – **P/N 48111B**

Adjustable fan switch feeler – **P/N 48171**

The temperature feeler provides airflow over the fan switch which regulates the cycling of the fan. The temperature feeler can be adjusted for different outside temperatures by rotating the location of the temperature feeler holes. This will provide optimum performance and will reduce or eliminate unnecessary fan cycling of the unit in different applications.



FEELER ADJUSTMENTS

If surrounding air is warm (>-5˚C/23˚F)

The fan switch should be set to 115°F or higher to shut down unit when heat exchanger is properly cooled which also keeps the fan motor from excessive running when discharging cooler air. The switch can be adjusted by using a flat-headed screwdriver and turning it clockwise or counter-clockwise to desired temperature. Turn the temperature feeler so that the holes are parallel with the heat exchanger and ensure that nothing is blocking the air flow. By doing this the fan switch will remain cool and not overheat.

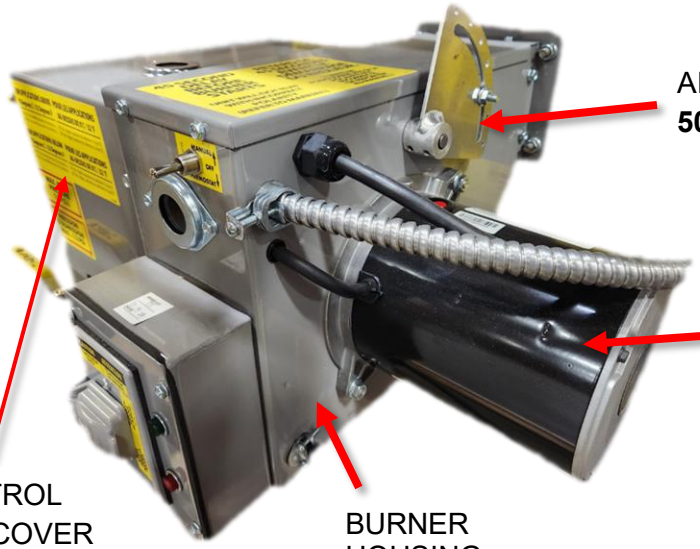
If surrounding air is cold (<-5°C/23°F)

The fan switch should be set between 90°-100°F. The colder the temperature the lower the setting to prevent excessive fan cycling. Turn the temperature feeler so that the holes are closed off as the air goes over the heat exchanger, this will reduce fan cycling.

NOTE: Feelers can be difficult to remove therefore it is recommended to replace the feeler if replacing switch.

NATURAL/PROPANE BURNER COMPLETE

BURNER ASSEMBLY (COMPLETE)
50289



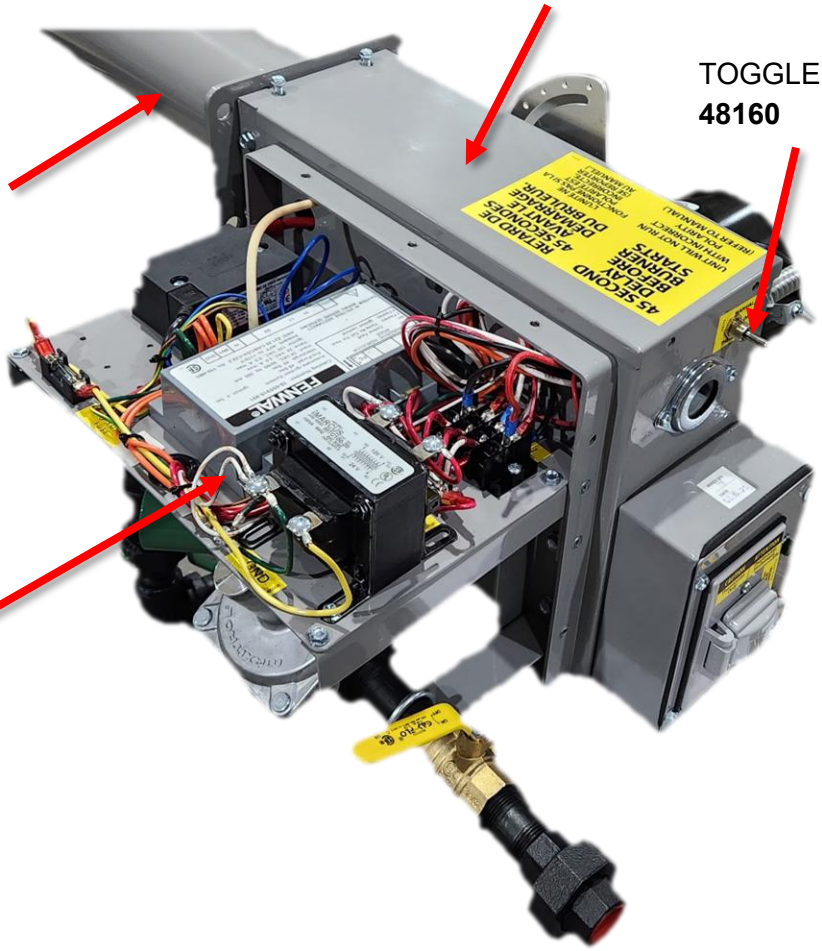
AIR DAMPER LEVELER
50253

BURNER MOTOR
48140A

CONTROL
BOX COVER
50155

BURNER
HOUSING
50250

BURNER ACCESS
COVER
50143

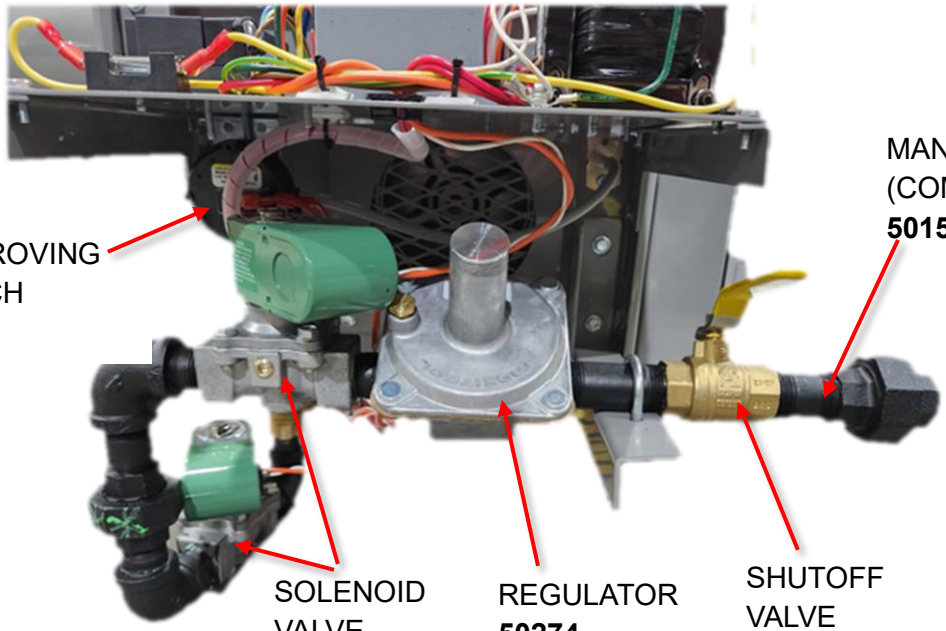


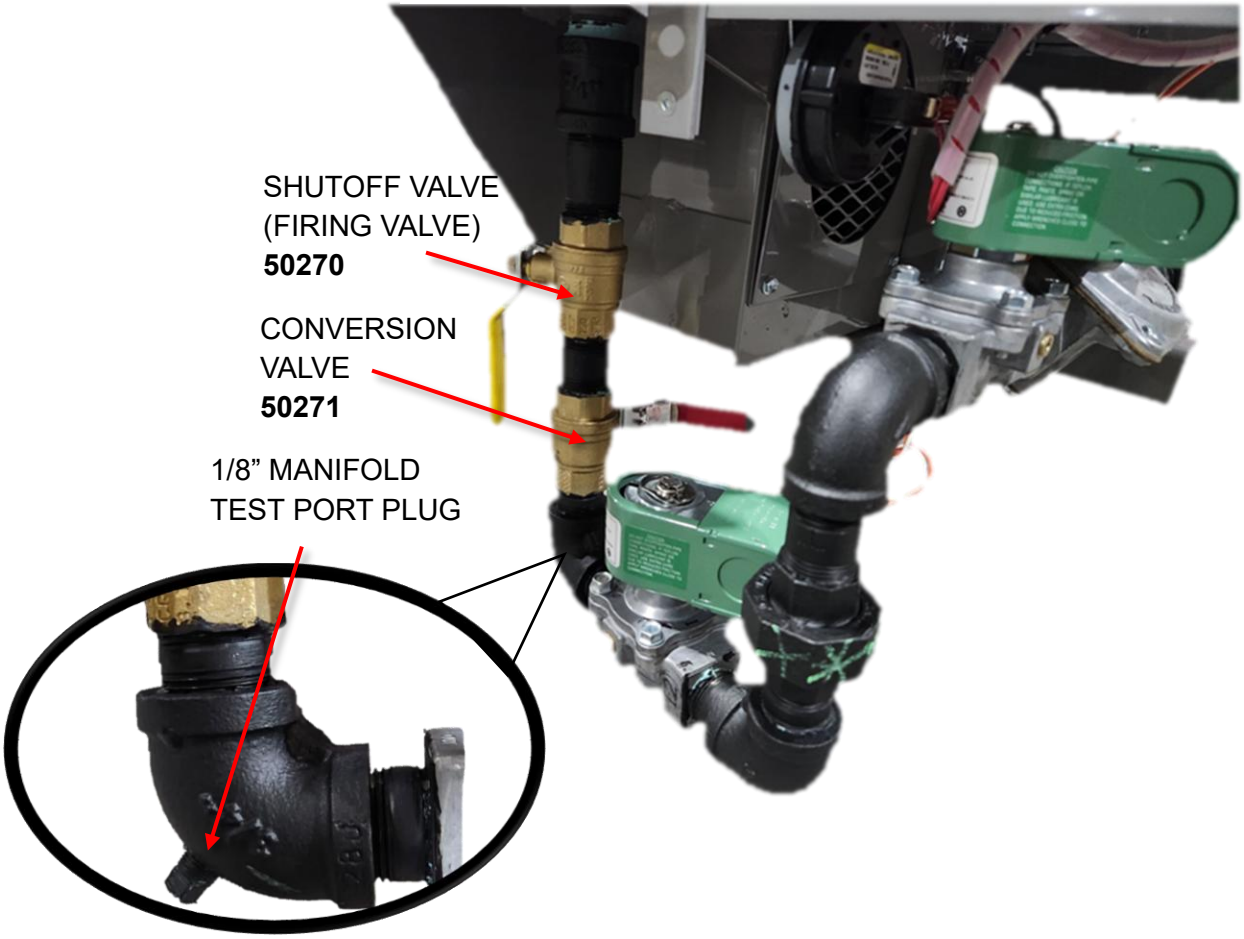
TOGGLE SWITCH
48160

BLAST TUBE
ASSEMBLY
50257

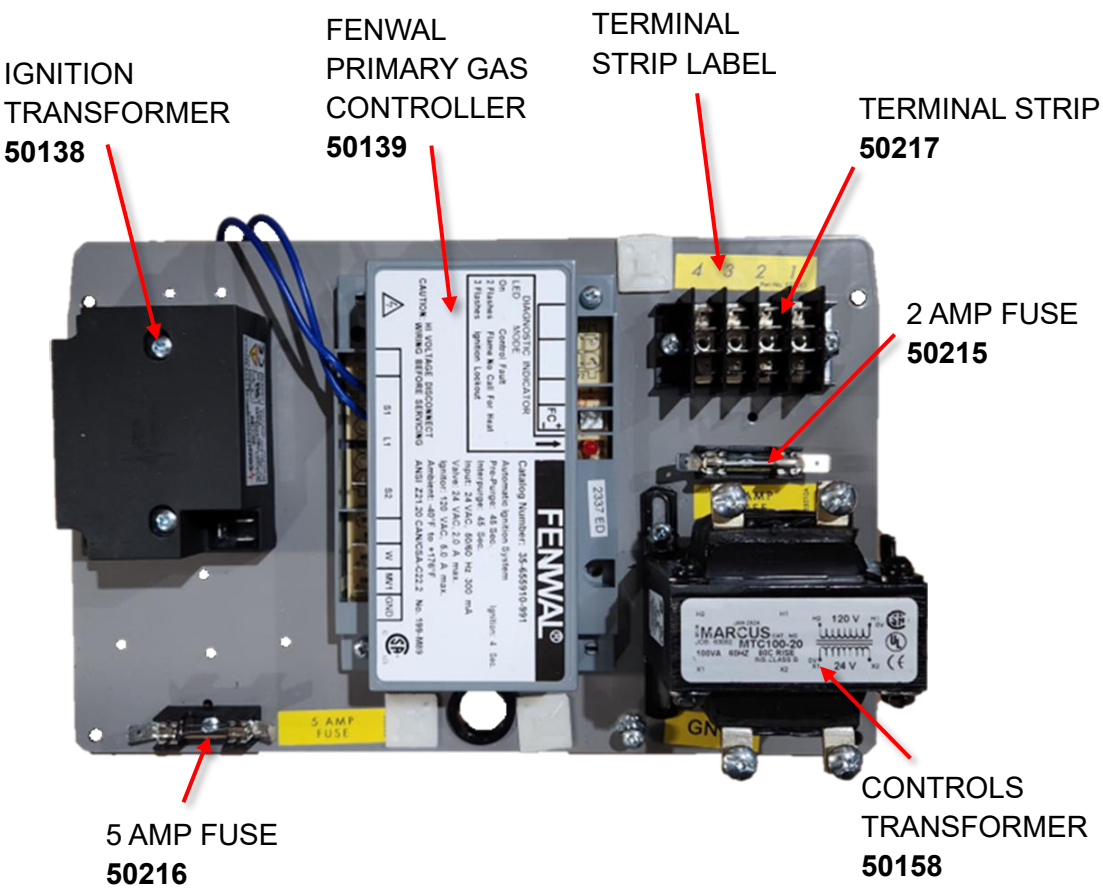
ELECTRICAL
PANEL
(COMPLETE)
50156

MANIFOLD COMPONENTS





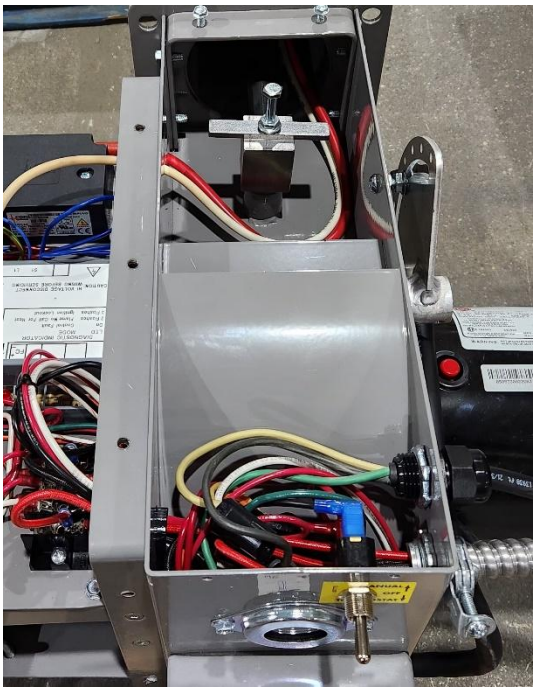
ELECTRICAL COMPONENTS



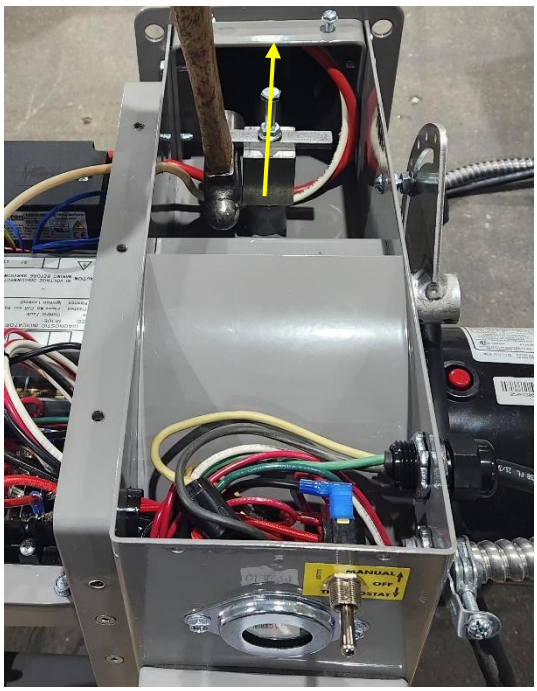
ACCESSING FLAME ROD AND ELECTRODE

1. Remove 4 burner access cover screws.

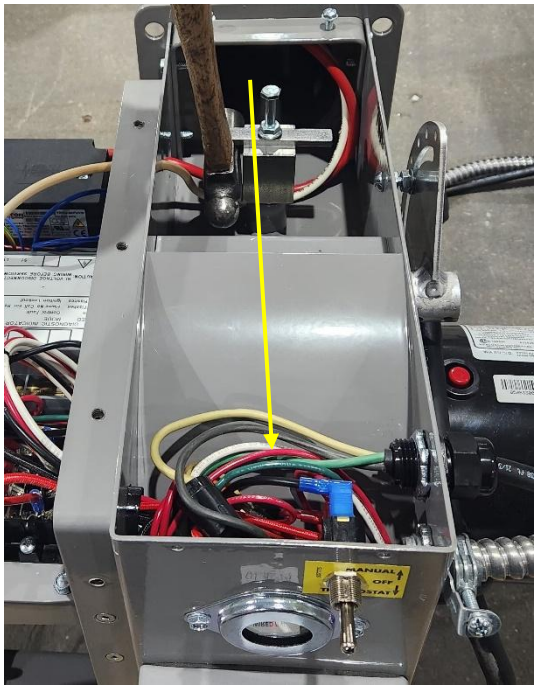
2. Remove cover and place to the side.



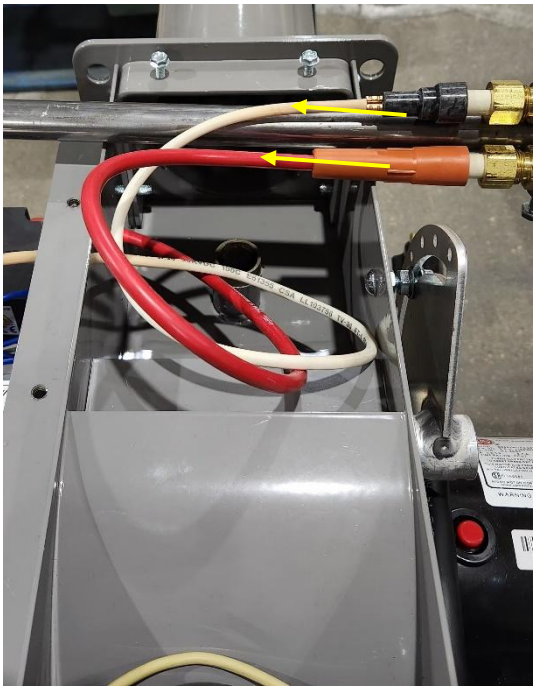
3. Gently tap the cross bar up on drawer assembly mount.



4. Pull drawer assembly back to remove from blast tube.

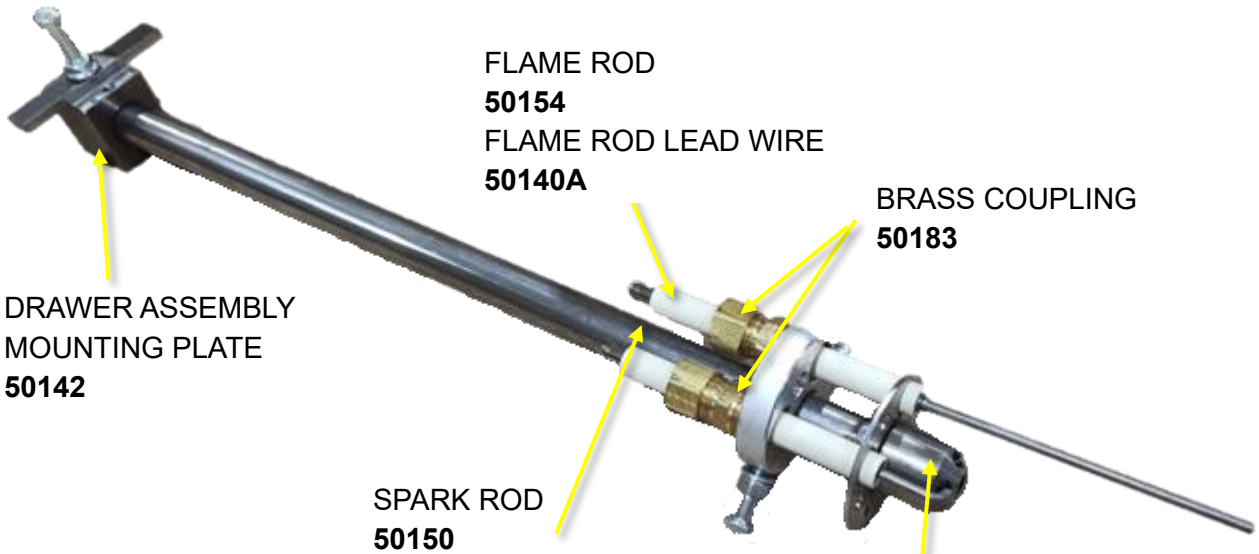


5. Lay assembly across burner housing and remove wire boots.



BURNER DRAWER ASSEMBLY

DRAWER ASSEMBLY
(COMPLETE)
50268



FLAME ROD
50154
FLAME ROD LEAD WIRE
50140A

BRASS COUPLING
50183

DRAWER ASSEMBLY
MOUNTING PLATE
50142

SPARK ROD
50150
SPARK ROD LEAD WIRE
50140

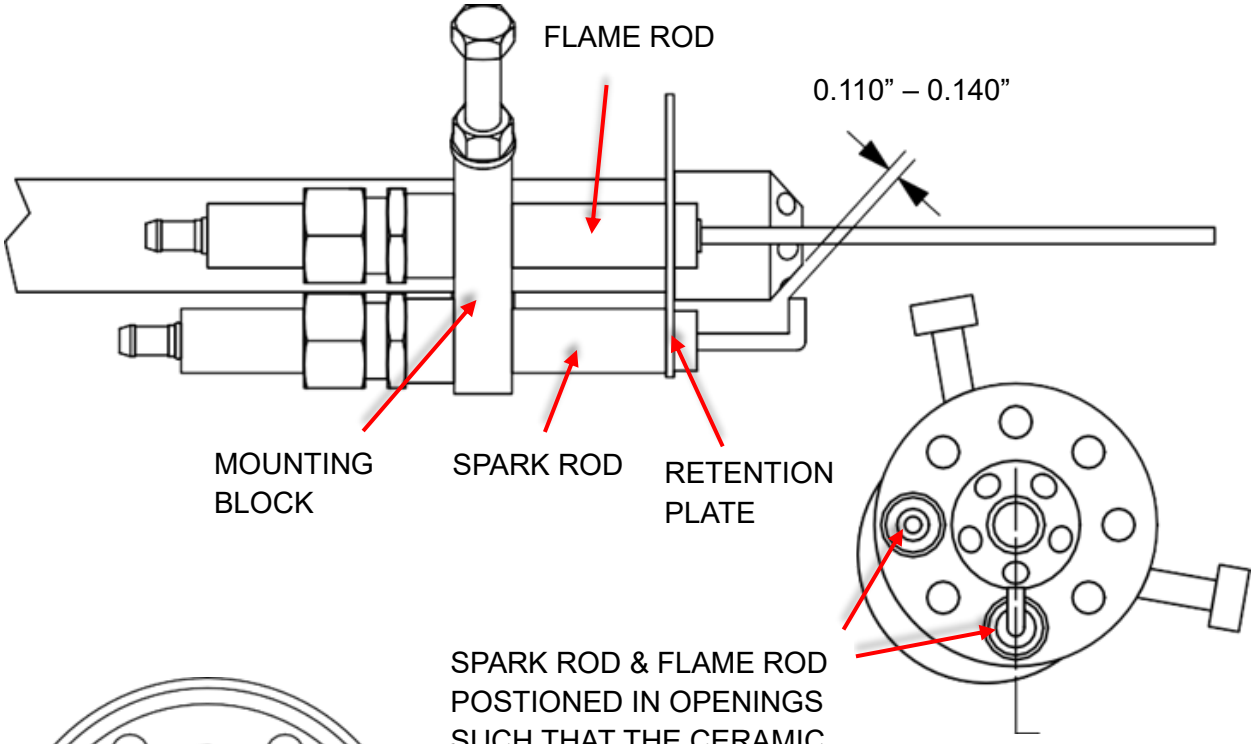
LP/NG NOZZLE
48292

ELECTRODE AND FLAME ROD SETTINGS

Adjust by loosening compression fitting nuts and sliding / rotating spark rod or flame rod into correct position and then tightening compression fitting nuts.

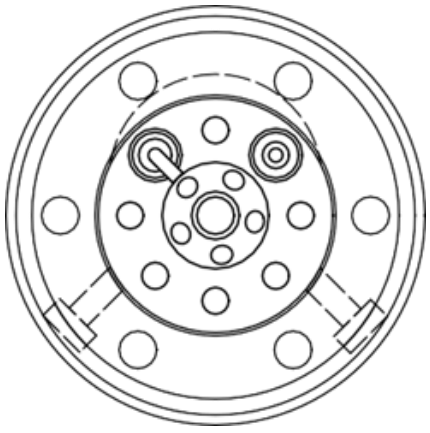
It may be necessary to turn the entire compression fitting slightly where it threads into the mounting block to properly align the rods in the retention plate holes so they don't contact the metal edges at any point.

⚠WARNING **DO NOT OVERTIGHTEN COMPRESSION FITTING NUTS! EXCESSIVE TIGHTENING MAY RESULT IN DAMAGE TO THE CERAMIC INSULATION.**



SPARK ROD & FLAME ROD POSTIONED IN OPENINGS SUCH THAT THE CERAMIC INSULATOR DOES NOT CONTACT METAL EDGE OF RETENTION PLATE AT ANY POINT

SPARK ROD POSITIONED IN CENTER OF GAS OUTLET HOLE



DRAWER ASSEMBLY SHOWN INSTALLED INTO BURNER TUBE (VIEWED FROM FIRING END)

TROUBLESHOOTING GUIDE

ALWAYS CHECK FOR SUFFICIENT POWER, GAUGE OF CORD, POLARITY AND GAS PRESSURE. POWER AND GAS SUPPLY MUST ALWAYS BE SHUT OFF BEFORE REMOVING OR REPLACING ANY COMPONENTS ON THE HEATER.

1) **Unit is turned on; nothing happens.**

a) Check for 115 volts AC across terminals 1 and 2. If no voltage, check power source.
b) Check for power across terminals 2 and 3. If no power, inspect toggle switch or thermostat, replace if faulty.
c) Check the thermal overloads on burner supply fan motor. Reset by pushing the red button on motor housing.
d) Ensure proper connection to burner fan. If power is at connection, and neutral wire secure, replace burner motor.

2) Red LED light does not flash on start-up.

a) Check for power across terminals 2 and 4. If there is no power, remove the high limit cover and check for power on high limit. If there is no power, inspect the air switch and tubing. Adjust and/or replace as necessary. If high limit powered on one side only, replace high limit.
b) Check power at 2-amp fuse. Replace if faulty.
c) Check across 120V side of transformer for power. On the 24V side, reading should be steady 24V. If not, replace the transformer.
d) Check across 5-amp fuse for power. Replace if faulty.
e) Check L1 connection to terminal 4, ensure good connection.
f) Ensure proper ground at gas primary.
g) Controller may be faulty, check LED for steady on state or flashing codes.
h) If LED light stays on during pre-purge cycle, replace ignition controller.

3) Burner will not ignite.

a) Always make sure gas supply pressure is 14” W.C. (1/2 PSI) or less as over that amount could cause damage to manifold regulator.
b) Check gas pressure at 1/8” tap on elbow of manifold. Ensure pressure is correct (See page 9). If there is no pressure there, remove cover and check for 24v across solenoid valve wires. If voltage is present, replace solenoid valve.
c) If there is no voltage, at solenoid valve, check gas primary control to ensure wired and grounded properly. If wired properly, and still no voltage to solenoid, replace gas primary.
d) Remove the electrode assembly from burner housing. Shut off all manual gas valves then reset the unit. Install jumper wire between terminals 3 and 4. Lay electrode assembly across top of burner housing. Carefully check for spark across the ignition gap after 45 second pre-purge. If there is no spark, check for 120VAC at ignition transformer. If there is power, replace the transformer. If there is no power, replace gas primary. If spark is arcing at another point other tan tip of spark rod, ensure spark rod is in correct position. If it is, then replace the spark rod. After the test, remove the jumper from terminals 3 and 4.

4) Burner ignites but then shuts down.

a) Connect D.C. Micro amp multimeter probes to FC pins controller (beside LED light). You should receive a reading between 3.5-5.5 microamp (fluctuating 10%) during the time it fires. If the reading is lower, inspect flame rod and wire lead. Meter should read 1 microamp or higher (If meter reads below “0” on scale, meter leads are reversed. Disconnect power and reconnect meter leads for proper polarity).
b) If flame current measures below 1 microamp, replace gas primary control.
c) If no flame current is measured, remove electrode assembly. Check continuity on flame rod wire. Inspect flame rod for chips or cracks. Clean if necessary. Check and clean the nozzle. Ensure all connections are tight.
d) Disconnect orange MVI wire from controller. Shut off gas and with AC voltage tester, check between 24V ground side of transformer and MVI terminal for voltage during TFI. Reading should be steady 24 VAC.
e) Supply gas pressure to unit must be the proper pressure. (Refer to manual) If the wrong size line is used to correspond with length, you may have to adjust to ensure correct supply pressure at unit.
f) Check polarity, ensure no AC voltage on terminal 2. The voltage supply must be consistent 108-132 volts.
g) If you are running more than one unit off a single gas source and one unit is shutting down, be sure size of hose is correct for the BTU’s and the length of the hose. Check at test port on elbow to ensure proper and constant pressure to burner.

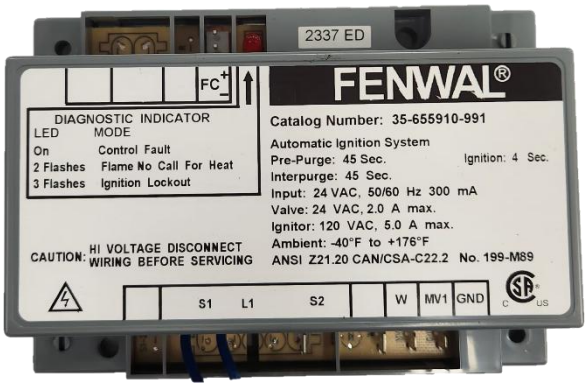
5) Main supply motor does not come on, unit shuts down on high limit.

a) Check the temperature feeler, make sure it is in properly.
b) Jumper out fan switch to test motor. If you have voltage to motor and still does not start, replace motor.
c) Check line voltage to ensure proper voltage.
d) Check amps draw on motor, motor may be running too hot and not running due to thermal overload being tripped.
e) Check for 120VAC on fan switch terminals. If you only have power on one side after the unit heats up, replace the fan switch.
f) Replace high limit as it may be tripping too soon and not giving fan switch time to engage.
g) Make sure the fan switch is at the correct temperature for conditions (See page 9).

6) If the unit does not run smoothly and quietly.

a) Check to ensure proper gas supply pressure and proper manifold.
b) Adjust the air setting on the adjustable damper connection.

Sequence of Operation for Fenwal Controller



Standby: The burner is idle, waiting for a call for heat.

Pre-Purge Delay: The control will perform a self-check routine, flash the diagnostic LED, and begin a 45 second pre-purge delay.

Trial For Ignition: The solenoid valves are energized. A flame should be established within the factory set trial for ignition time ("lockout time").

Lockout: The control has shut down for one of the following safety reasons:

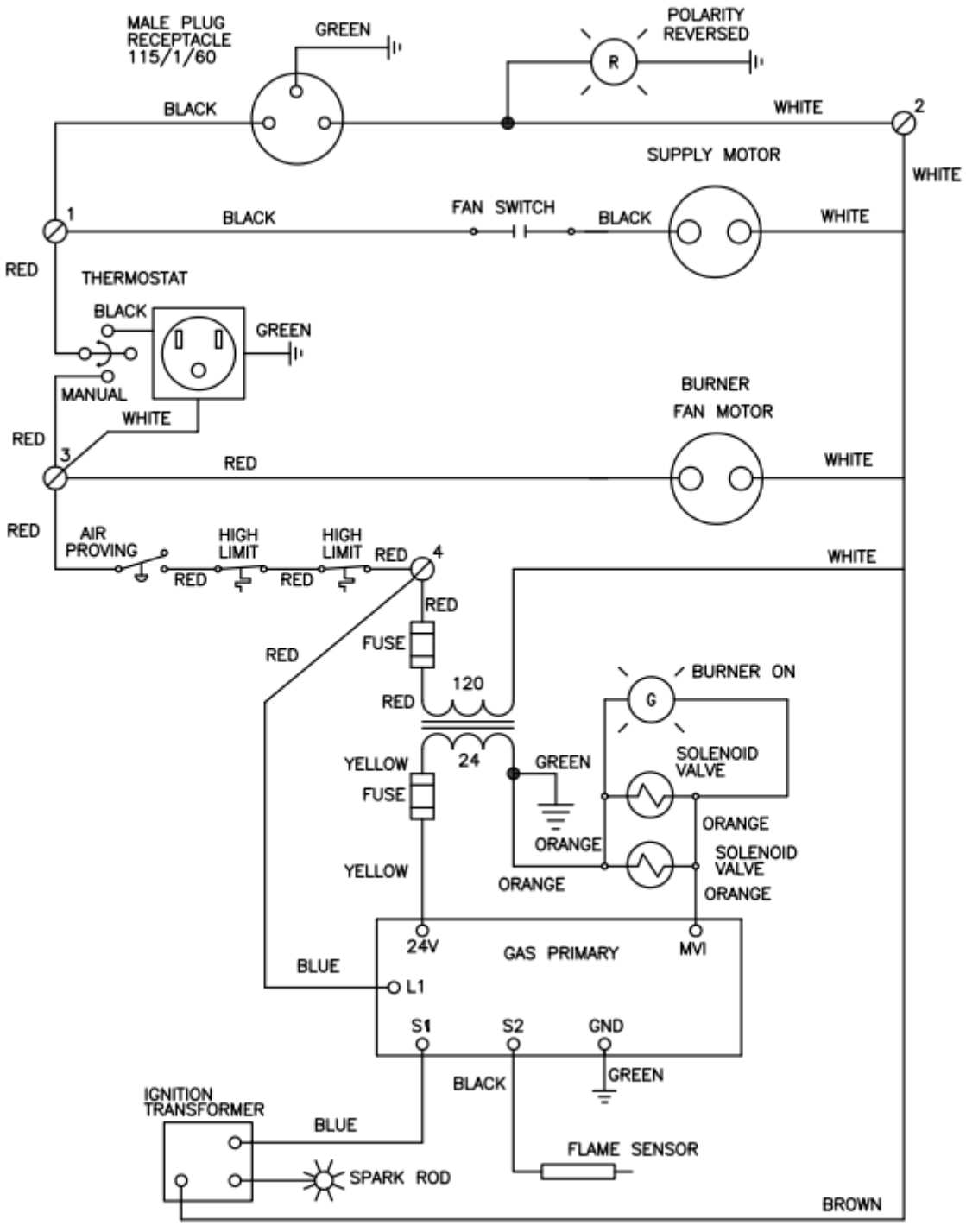
1. The trial for ignition (lockout) time expired without flame being established 3 consecutive times.
2. The flame rod detected flame without call for heat.

To reset the control from lockout, turn the system switch to “OFF” then back to “MANUAL” or “THERMOSTAT”.

Run: The flame is sustained until the call for heat is satisfied. The burner is then shut down and sent to Standby.

Inter Purge: If the flame is lost while the burner is firing, the control shuts down the burner, enters a 45 second inter purge (recycle) delay, and repeats the ignition sequence. The control will continue to Recycle each time the flame is lost unless there are 3 consecutive unsuccessful attempts to relight.

IDF500 LP/NG WIRING DIAGRAM



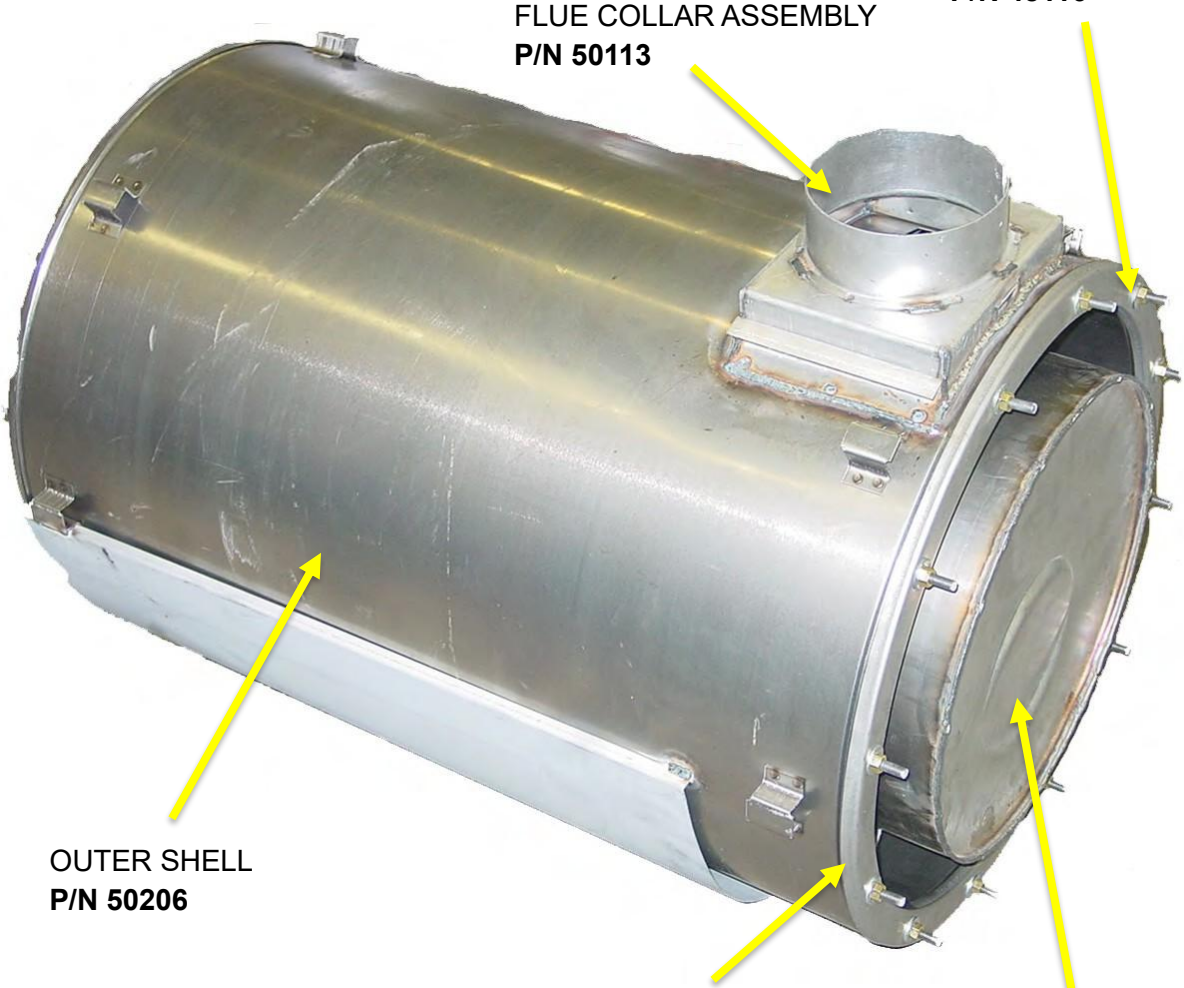
* IDF350 HAVE ONE LESS SOLENOID VALVE

HEAT EXCHANGER COMPONENTS

FULL ASSEMBLY
P/N 50200

RETAINER BOLT
W/WASHER
P/N 48116

FLUE COLLAR ASSEMBLY
P/N 50113



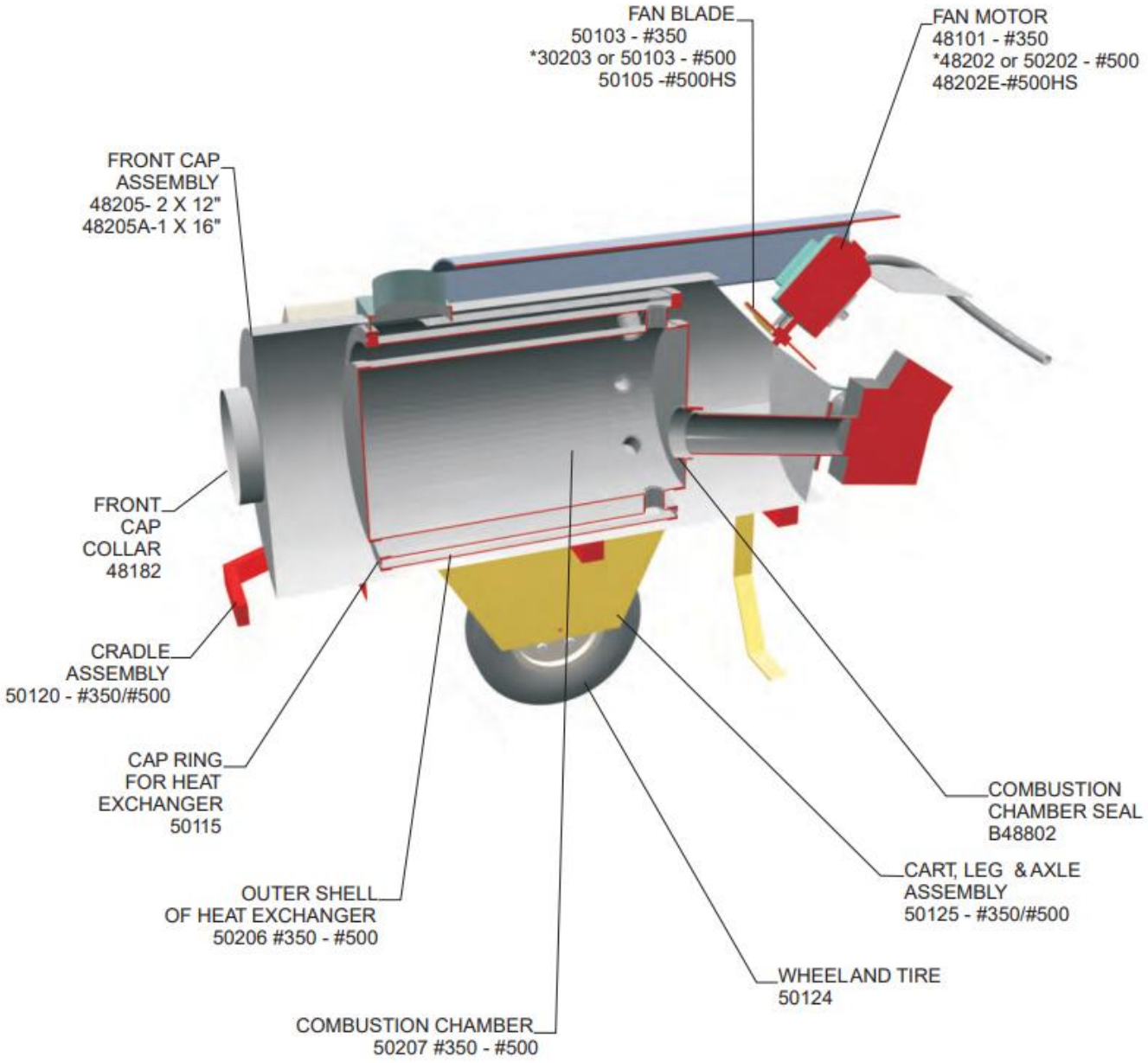
OUTER SHELL
P/N 50206

CAP RING ASSEMBLY
P/N 50115

COMBUSTION CHAMBER
ASSEMBLY C/W INNER SHELL
P/N 50207

IDF350 & 500 FROST-FIGHTERS

IDF 350 & 500 FROST-FIGHTERS CONT'D



***Please note: Please specify either 1 HP 3450 RPM or 1 HP 1750 RPM motor to make sure proper blade is being used.**

FROSTFIGHTER WARRANTY

Frost Fighter Inc. warrants the Frost Fighter heater to be free from defects in workmanship and materials for a period of twelve (12) months from date of initial service not to exceed fifteen (15) months from date of shipment.

If during the warranty period, the heat exchanger fails under normal use and service due to a defect in material or workmanship; said heat exchanger will be repaired or replaced free of charge F.O.B. the Winnipeg Factory.

All mechanical and electrical components are covered by a one (1) year limited warranty. Normal maintenance items are excluded under the warranty. The warranty does NOT include any freight, labor or sales taxes incurred by the purchaser and is subject to the following conditions:

1. The heater shall be operated in accordance with the manufacturer's operating and maintenance manual.
2. The heater shall be subject to normal use in service and shall not have been misused, neglected, altered or other wise damaged.
3. The unit shall be operated within the rated capacities and with the prescribed fuel.
4. The unit has not been allowed to exceed its proper temperature limits due to control malfunction or inadequate air circulation.
5. There is no evidence that the unit has been subject to tampering or deliberate destruction.
6. The heat exchanger shows no signs of an implosion or explosion.

No representative of Frost Fighter Inc., nor any of its distributors or dealers, is authorized to assume for Frost Fighter Inc. any other obligations or liability in connection with this product, nor alter the terms of the warranty in any way. This warranty is limited to the express provisions contained herein and does not extend to liability for labor costs incurred in replacing defective parts.

Parts can be obtained from Frost Fighter Inc, Winnipeg, Manitoba on the basis that credit will be issued if the defective parts returned qualify for replacement pursuant to the terms and conditions of this warranty. Authorization to return any alleged defective parts must be first obtained from the factory prior to transporting the part. An R.G.A.# must be provided from a Frost Fighter Inc representative. The transportation charges for the alleged defective part must be prepaid by the owner. Frost Fighter Inc. will not accept charges for parts purchased unless the conditions of this warranty have been satisfied and prior authorization to purchase the parts has been received from the factory.

FROST Fighter PORTABLE HEATERS

125 FURNITURE PARK, WINNIPEG, MANITOBA
R2G 1B9, (204) 775-8252, 1-888-792-0374